MARKER NOMINATION INFORMATION

General

Name of Item:	Balls Head Coal Loader
Description of Item	A former Sydney Harbour coal unloading and bunkering / loading facility, now used as a community area and Sustainability Centre.
Engineering Heritage theme(s)	Energy - Coal Transport – Sea / rail
State/Territory/Local Govt Heritage listing	State Heritage Register NSW North Sydney Council National Trust (NSW)
Type of heritage	Immoveable / Tangible
Relevant Dates:	1914: Initial design by FE Stowe 1919: Installation of mechanical equipment commenced 1919: Loading out commenced 1923: Cable tramway commissioned 1964: Taken out of service 1976: Conveyor system replaced tramway 1992: Coal loader ceased operation 2007: Initial community centre opened
Location:	Wollstonecraft, NSW
Coordinates	-33.84390, 151.19370
Local Government Area:	North Sydney Council
Owners:	Loader site: North Sydney Council Pier: Transport for New South Wales
Marker Type sought	Engineering Heritage National Marker

Description

The Balls Head Coal Loader was originally constructed as a coal bunkering facility for overseas shipping through Sydney Harbour. Much of the equipment was removed on decommissioning in 1996, and the complex currently comprises the following:

> **Coal loading platform**: A 180m long x 49m wide platform, with four underlying tunnels (each 6m high x 2.5m wide). There are four alternating rows of hopper bins (in the shape of inverted pyramids) between the platform and the tunnel roof, and the rails and/or grooves for the bridge gantry crane are still evident on the western and eastern extremities of the site. One tunnel contains the substantially intact electric Mead Morrison travelling feeder engine with attached trolley car which rests on a raised tramway. Raised concrete beds on the deck now reflect the former coal loading conveyor belt system.

Seawall: Built of sandstone, this incorporates an oil fuel pump room, which retains the original Kinny MFC Co pumps, No 10 Walworth valves and steel pipes, a mounted General Electric induction motor and a series of pumps, pipes and equipment.

Timber Pier: This measures 169.8m long by 18.7m wide, and approximately 8m high, with piles extending up to 25m below the pier into the sea and seabed. Originally constructed of timber piles and cross bracing with a timber deck, the pier was reinforced with a steel frame pier structure in 1976. Evidence of the steel frame support structure for the elevated cable rail tramway system survives, as do remnants of the former travelling elevator delivery gantries and rails.

Miscellaneous: Shipping refuelling tank stands, two former oil tanks located in bush lands, a tramway car, and two mooring anchors.

Buildings: Offices and workshops, now used for the Sustainability Centre, café, etc.

Significance

Historical and Social Significance

An item is important in the course, or pattern, of a region's history	The Balls Head Coal Loader is a key element of the maritime and commercial development of Sydney Harbour. It is located in what was Alexander Berry's North Shore Estate. Berry and his business partner, Edward Wollstonecraft, were the first Europeans to utilise Berrys Bay for maritime purpose in the 1800s. They constructed a stone wharf, then a stone warehouse, and workers' cottages and huts. The NSW Government took over the harbour foreshore in 1906 and leased the land to the Sydney Coal Bunkering Company, a subsidiary of the Union Steam Ship Company of New Zealand. This was an early example of the "coal economy", for then most ships were coal fired but Sydney did not have any modern facilities to handle the large quantities of coal fuel required by the many big ships passing through the Port. With the construction and commissioning of the Balls Head Coal Loader, Sydney could then become a key port in the international maritime passenger and cargo trade. As Sydney Harbour was the prime deep-water port in Australia, this led to its role in "facilitating global trade" to Europe, Asai and North America – see Photos 1 & 2. Transport of coal from the Illawarra and Newcastle area coal mines to Balls Head was primarily by "*Sixty-milers*". These were small ships that used the wharves close to the mines, and were a key part of the coastal maritime trade.
An item has strong or special association with the life or items of a person, or group of persons,	**Francis Ernest Stowe** The key Australian engineer associated with the Coal Loader was Francis Ernest Stowe. An Irish immigrant, Stowe set up practice in Australia as a civil engineer and architect,

of importance in in a region's history	establishing the Sydney Marine Engineers College. Stowe's interests were remarkably varied and included the counterweight tramway leading down to Darling Street Wharf in Balmain East, and the Rockhampton tramway. He developed a concept for a harbour bridge in Sydney with three arms, linking Millers Points, Balmain and Balls Head, with hub and memorial tower on Goat Island. Reportedly, this was only narrowly passed over by the Government in favour of the Bradfield proposal. He was also in the Technical Education Branch, as a teacher in "Slide Rule". **Henry Lawson (1867 – 1922)** While definitely not an engineer, Henry Lawson was a notable Australian writer and poet, in equal standing with his contemporary, AB 'Banjo' Paterson. While usually celebrated as a 'bush poet', Lawson lived near the proposed coal loader and joined the local clamour objecting to the industrial development of this bushland site. In 1916, he wrote the poem "The Sacrifice of Balls Head", with the first verse reading: *They're taking it, the shipping push,* *As all the rest must go –* *The spirit of the past is dead* *North Sydney has no soul –* *The State is cutting down Balls Head,* *To make a wharf for coal.* This could be seen as a very early example of the environmental or conservationist movement in Sydney & Australia, which certainly impacted on engineering history and heritage
An item has potential to yield information that will contribute to an understanding of a region's history	The construction and operation of the Balls Head Coal Loader involved significant social issues, including: • Early community protests on environmental and conservation concerns on how the natural site was to be destroyed for a coal handling operation, which were championed by Premier Jack Lang. This led to the poem by notable Australian poet, Henry Lawson. • The operation of such a facility in a developed residential area, and how the issue of community concern over the widespread coal dust was acknowledged and treated, a sign of things to come. • When operations finally ceased, how local pressure resulted in the site being repurposed as a community facility, and how the North Sydney Council's staging of the works generated effective community support and usage, particularly with the new facility's emphasis on sustainability.

Engineering or Technical Significance

An item is important in demonstrating creative or technical achievement	The Balls Head Coal Loader significance here includes: • A rare surviving example of an automated early 20th Century coal bunkering and loading facility. It is the only one of its type in NSW and the only surviving intact example of this type of engineering internationally. • The Mead Morrison travelling feeder engine inside Tunnel 1 is an extremely rare example of the technology used in coal loader that remains in Australia and world-wide. • It was one of the few cable tramways outside of San Francisco, and last operating in Australia when decommissioned in 1975. • With the change of usage from coal bunkering to coal export, Balls Head was recommissioned in 1976, when the cable tramway was replaced by a high-speed conveyor belt coal retrieval system for loading onto the bulk carriers, which increased capacity to about 1,000 tonnes per hour. This innovative site adaptation was recognised with an Engineering Excellence award from the Institution of Engineers, Australia, South Australian Division.
An item is important in demonstrating the principal characteristics of an aspect of the development of engineering practice	As well as the engineering developments noted above, the works undertaken to restore and convert the coal loader for community usage provide an excellent example of innovative and successful heritage engineering. The design approach was based on the significantly lower design loads, for instead of supporting hundreds of thousands of tonnes of coal, the structure now only had to cater for low pedestrian and light maintenance vehicle loads. This meant that a lot of the original structure could be retained, even though there was some deterioration.
An item possesses uncommon or rare aspects of the development of engineering practice	Possible potential research areas would include: • Construction techniques from the early part of the 20th Century, especially in the marine environment, including the use of recycled and local materials. • The role that the “Sixty-milers” played in the development of the local and export coal industries in NSW / Australia. • The use of the Mead Morrison travelling feeder engine, located inside the tunnel complex, which is a unique example of this type of technology used in NSW. • The adoption and use of the cable tramway system for loading coal, as it was possibly one of few outside of San Francisco. In addition, the design and construction works undertaken to repurpose the Coal Loader would provide an excellent case study in innovative heritage engineering.

An item could yield new or further substantial scientific and/or archaeological information; and/or is an important benchmark or reference site or type	The construction and operation of the Balls Head Coal Loader involved significant social issues, including: • Early community protests on environmental and conservation concerns on how the natural site was to be destroyed for a coal handling operation, which were championed by Premier Jack Lang. This led to the poem by notable Australian poet, Henry Lawson. • The operation of such a facility in a developed residential area, and how the issue of community concern over the widespread coal dust was acknowledged and treated, a sign of things to come. • When operations finally ceased, how local pressure resulted in the site being repurposed as a community facility, and how the North Sydney Council's staging of the works generated effective community support and usage, particularly with the new facility's emphasis on sustainability

Summary Statement of Significance

The Balls Head Coal Loader has national engineering heritage significance, with its development of advanced engineering technology and for its role in "***Powering Global Trade***" for Australia. Through the innovations of its designer, notable engineer Francis Earnest Stowe, it pioneered the adoption of international engineering techniques, and was the first and largest such coal handling plant in the southern hemisphere. World-wide, it is a rare surviving example of an automated early 20th Century coal bunkering and loading facility. The Mead Morrison travelling feeder engine inside Tunnel 1 is an extremely rare example of the technology used in coal loaders that remains in Australia and world-wide. When decommissioned in 1975, it was one of the few electric cable tramways outside of San Francisco, and was the last operating in Australia

The continuing transition of Balls Head is also worthy of recognition. With the change of usage from coal bunkering to coal export, Balls Head was recommissioned in 1976, when the cable tramway was replaced by a high-speed conveyor belt coal retrieval system for loading onto bulk carriers. After the end of export coal traffic from Sydney Harbour, Balls Head was further transformed into a community facility and Sustainability Centre, through very innovative heritage engineering. This, and the innovative early 20th Century design and construction techniques, especially in the marine environment, are worthy of further investigation, research and recording.

On the social side, Balls Head Coal Loader is also notable Australia wide for its early connection with the environmental movement, with the 1916 poem by the famous Australian poet, Henry Lawson, titled "*The Sacrifice of Balls Head*". While this did not stop construction of the coal loader, the operators recognised the impact of coal dust on the nearby communities, and adopted early examples of dust suppression and cleaning for environmental protection. Finally, the professional project management approach to developing and funding the transition to the community facility is also worthy of recognition.

History

The development of the Balls Head Coal Loader is very much linked with the maritime history of Sydney Harbour, and played a major role in the development of Australia's international trade.

The Coal Loader is located in what was Alexander Berry's North Shore Estate. Berry and his business partner, Edward Wollstonecraft, were the first Europeans to utilise Berrys Bay for maritime purpose in the 1800s. They constructed a stone wharf, then a stone warehouse, and workers' cottages and huts.

The NSW Government took over the harbour foreshore in 1906 and leased the land to the Sydney Coal Bunkering Company, a subsidiary of the Union Steam Ship Company of New Zealand. This was an early example of a "coal economy", for most ships were then coal fired but Sydney did not have any modern facilities to handle the large quantities of coal fuel required by the many big passenger and cargo ships passing through the Port. Coal handling was all by manual labour, undertaken by "coal lumpers", a dirty and dangerous occupation.

The Coal and Bunkering Company engaged Francis Ernest Stowe as the engineer for the project. Stowe received "no objections" in May 1914 from North Sydney Council but wartime shortages delayed start of work on site. However, Stowe, did travel to the United States to research the latest techniques in coal handling facilities.

In 1916 Stowe received the go-ahead from his client to recommence documentation of the coal loader. Stowe and Kay McNicol worked as joint engineers on the project and the Mead-Morrison Manufacturing Company in Chicago was responsible for the supply and installation of the coal loading equipment.

Construction then commenced with major excavations of the sandstone cliffs of Balls Head Bay. A project of this size and complexity would have been difficult at that period, at the end of WW1 and then the impact of the Spanish Flu. However, the work did advance, with limited machinery and much day labour. Most materials were sourced locally, including steel from Hoskins' Lithgow plant, and brush box timber from the North Coast and ironbark from Cuttagee.

The engineers were quite innovative for their time and did manage to recycle materials, such as Thames River gravel from ships' ballast, that was used in concrete. Other innovations included the localised use of reinforced concrete cellular construction for the chambers along the western edge of the storage platform, to address settlement issues of the sea wall.

By May 1919, the construction work was well advanced and an engineer from Mead Morrison, arrived to supervise the erection of the machinery and surface gear. The Sydney Morning Herald reported that he considered that Balls Head would be *"the most efficient big coal handling plant south of the line."* Obviously, his work and that of the Australian contractors was quite successful, for operations started in November 1919.

However, at this stage the full Mead-Morrison cable railway out-loading system had not yet been fully installed. Therefore, operations started in a limited way, using the rolling gantry cranes on the main coal loader floor to both unload coal from the colliers onto the platform, and to bunker vessels. The mechanised out-loading system was fully completed until 1923.

The key function of the coal loader was to transfer coal from small coastal vessels, such as the notable "Sixty-milers", which operated from Catherine Hill Bay and the Illawarra region, to the large ocean-going ships. This was a key operation of the Union Steam Ship Company, with its world-wide businesses. Some coal was also taken by road to Sydney facilities that were then coal powered.

With a slump in the coal industry and the need for bunkering coal powered ships, the loader was taken out of service in 1964. After some 10 years and changes in the coal industry, Balls Head was recommissioned in 1974 as a coal export facility, transferring coal from smaller coastal carriers to large export ships, with Japan being a key customer.

This change is operations saw the need for greater efficiency, with the site being upgraded in 1976. The cable tramway was replaced by a high-speed conveyor belt coal retrieval system for loading onto the bulk carriers, which increased capacity to about 1,000 tonnes per hour. The new system was designed by the Sydney engineering consultants Soros Longworth and Mackenzie, and was constructed by Malco Industries of Adelaide. This innovative site adaptation was recognised with an Engineering Excellence award from the Institution of Engineers, Australia, South Australian Division.

With changes in the export coal industry, and the development of major facilities at Port Kemble and Newcastle, the Balls Head Coal Loader was decommissioned in 1996. In 1997 the then NSW Premier, Bob Carr declared the site would be retained for public usage. It was handed over to North Sydney Council, except for the outloading pier, which came under Transport for NSW (TfNSW).

North Sydney Council then prepared a master plan for the site in 1999, followed by detailed planning and design in 2005. From 2009 to 2018, works on the site were staged, resulting in progressive completion of community access facilities and exhibition space, the Sustainability Centre and a café.

However, as of 2025, no remedial or preservation works have been undertaken by TfNSW on the pier, which is rapidly deteriorating, with only works to contain fallen pieces from the wharf floating out into the bay and harbour.

References

Brogden, Wilf, *Oral History Interview by Margaret Park*, Sydney 1975, Stanton Library, North Sydney Council

Johnson, Frank, *Sydney's Balls Head Coal Loader – Engineering Heritage Becomes Heritage Engineering,* Engineering Heritage Australia, Vol 4, No 1, January 2022

McCarthy, Ken, *The Balls Head Coal Loader*, Trolley Wire, December 1975

North Sydney Council, *Centre for Sustainability*, Pamphlet

Sim, Norma, *The Sixty Miler*, 2005

Gallery

Photo 1: Powering Global Trade

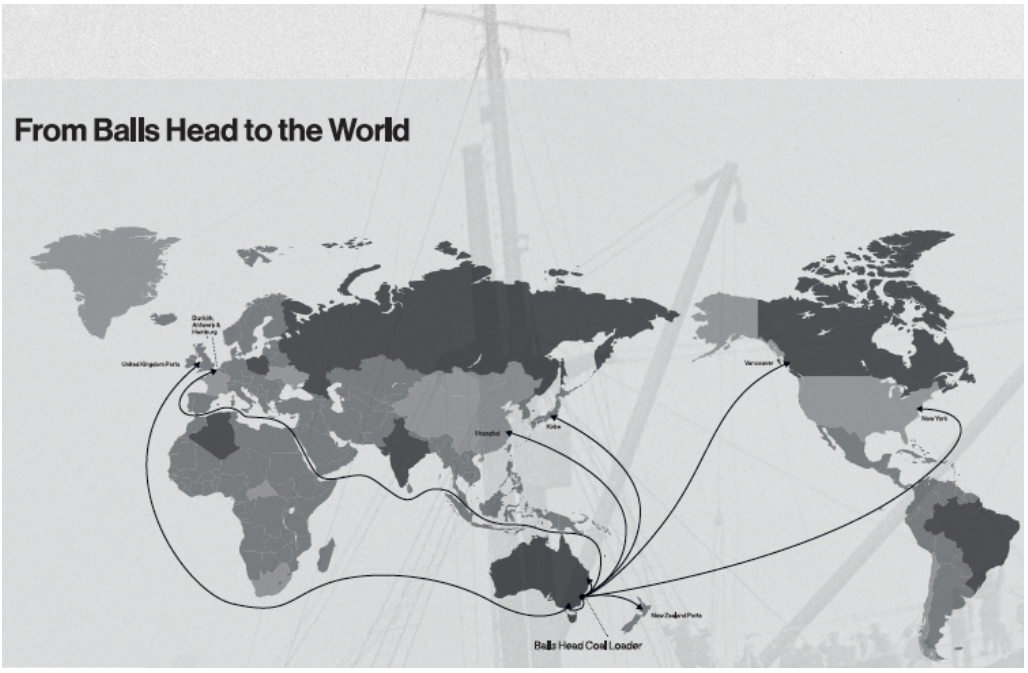

Photo 2: Balls Head trade connections

Images from information boards at Balls Head / Courtesy North Sydney Council

Photos to be provided for website

Location Map